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bers. Along the banks of streams, such as the San Joaquin and Kings River and a few smaller creeks where moisture was plentiful and trees and plants abundant, birds thrived and the avifauna was about the same as that of the lower mountain districts. But in many places no such stream existed within a radius of less than ten or fifteen miles. Scarcely a tree or living shrub existed any nearer; and birds or any inhabitants would have to be such as could adapt themselves to such barren conditions.

During the summer months the long absence of rain dried the alflliria so that the country was almost desolate in appearance. The level of the plain was broken occasionally by winding, shallow depressions, called by the settlers "sand hollows." These by some are said to be the remains of old water courses. The influence of irrigation has brought the underground water so near the surface that the "sand hollows" have been transformed into extensive ponds which are the reproductions in minature of the old Tulare Lake. The same cause, irrigation, from which Tulare lake nearly went dry a few years ago, has filled these dry hollows with water and they are now teeming with all the varied forms of plant and animal life once found along its shores.

The burrowing owl, one of the most prevalent species formerly, is now becoming extinct wherever the country is thoroughly cultivated. These owls live and nest in the discarded burrows of squirrels, and the plentiful irrigation, which, in time, drowns out the squirrels, is far more fatal to the owls. The nightly "cuckoo" of these birds is seldom heard wherever the country is intensively cultivated. The meadowlarks also are far from being as plentiful as they once were, for the same causes which are exterminating the owls make nesting a very difficult and uncertain matter for the ground-nesting larks.

It may be said that the advent of orchards and vineyards and the multiplication of other conditions upon the plains favoring the lives of many other birds, has caused the bird population along the streams and in the foothills to overflow into this new territory. The population in some districts has increased extensively and a few species have increased to such an extent as to become a positive nuisance to the fruit growers at certain seasons of the year.

The migrations through the valley are of separate interest. During the winter months birds of the higher mountain districts are often seen upon the plains. However, it can hardly be said that the new conditions influence the migration of birds to any degree. An abundance of spring migrants arrive every year, but in all probability they are the same species which formerly came every spring to the more favorable localities of the valley.

### A Morning With the Birds of Juan Vinas, Costa Rica

BY MERRITT CARY

WHILE in Costa Rica last year with Prof. Lawrence Bruner and M. A. Carriker, Jr., of the University of Nebraska, I secured a number of bird notes which I thought might be of interest to CONDOR readers.

For three weeks we had been collecting at the Estancia Jimenez, far up on the southeast slope of the Volcan Irazu, and in Monte Redondo, a mountainous

region lying to the southwest of San Jose. On March 11, acting upon the advice of both Dr Jose Zeledon and Mr. Cecil F. Underwood of San Jose, we went down to Juan Vinas, some thirty-five miles east on the Ferrocarril de Costa Rica, where we were assured of good ornithological as well as entomological collecting. Fortunately Mr. Underwood accompanied us.

The altitude of Juan Vinas is about 3,000 feet, and the scenery picturesque. Situated on the border of a large savanna, well up the mountain slope to the north of the Rio Raventizon, the stream is seen a thousand feet below as a winding silver thread, bordered on either side with jungles of a rich green.

The dawn was yet scarcely breaking the morning after our arrival when we were awakened by the sweet notes of meadowlarks, which came floating softly to our ears from the savanna. We could more readily imagine ourselves home again, on the northern prairie in the early springtime, than in this far-away southern clime.

Soon other birds were heard—songs strange and unfamiliar to our northern ears. Within a short fifteen minutes the jungle was filled with an endless variety of bird notes. There was not the slow, gradual swelling of the morning chorus as in the north; but after the first notes of the earliest birds there was a sudden outburst of melody.

While disposing of our morning "coffee" the day's trips were planned, and I decided to accompany Mr. Underwood to the savanna and adjacent wooded slopes.

In some bushes near the house were a number of Passerini tanagers (*Ramphocelus passerinii*) which reminded us, in their jerky flight and movements, of the orchard oriole. As the birds moved about, their red rumps flashed brilliantly in the morning sunlight, and contrasted strongly with their black bodies and the dark green foliage. Several small finches with yellow face-masks were feeding in the short grass beneath the bushes and Mr. Underwood shot a pair, which proved to be Mexican grassquits (*Tiaris olivacea pusilla*). Later I often saw the grassquits feeding in the tall grass of the savanna, and once saw several sitting on the telegraph wire, occasionally uttering a few lively notes.

As we passed on toward the savanna bird-life became more varied. A beautiful wren-like song attracted us to some low bushes in the edge of the rank marsh grass. The singer, a small buff-breasted wren, was secured and found to be *Troglodytes intermedius*. Several others of the same species were soon afterwards located by their notes, but were extremely shy, and kept well concealed in the matted cover. When at intervals one did come above the level of the marsh it perched on an exposed twig for a few moments and gave forth its sweet song, differing from that of the *aedon* chiefly in slower measure.

While beating the grass for the wrens, Underwood secured a bright male Baird yellow-throat (*Geothlypis semiflava bairdi*), and several times we caught glimpses of a small brown rail<sup>a</sup> as it sneaked silently but quickly into denser cover. Numbers of large, yellow-bellied flycatchers (*Myiozetetes* sp.) were noisily mating in the larger tree clumps, and occasionally a very small flycatcher, *Todirostrum cinereum*, was noticed on a low, exposed climb. When seen thus—alternately darting after a passing insect, and again remaining stationary as it uttered a sharp little note accompanied by an energetic jerk of the tail, the bright yellow underparts made it a striking object indeed.

Another flycatcher noted here was *Myiarchus lawrencei*, a bird of somewhat

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<sup>a</sup> Probably *Porzana cinereiceps*.

solitary habits, which frequented the tops of small trees and at intervals uttered a melancholy, quavering note.

Having now become acquainted with some of the birds in and near the savanna we turned at right angles and followed a narrow trail through the jungle leading toward the high, wooded slopes on the north. Noisy ring tanagers followed us for some distance, seemingly much disturbed at our invasion of their domain, but kept well concealed in the dense undergrowth; while several times the peculiar *oop-ooop*, *oop-ooop* of a mot-mot led us on a vain chase through a jungle made penetrable only by the liberal use of our machetes.

In one of the densely shaded nooks along the trail I saw a large spider's web agitated by what at first was to me an unseen force, in the semi-darkness. Soon,



TREE SHOWING NESTS OF *ZARHYNCHUS WAGLERI*

however, my ears caught a faint humming sound, and I saw a small body faintly outlined just above the web, every few seconds darting towards it. At the first glance it appeared not unlike a large hawk-moth belonging to the *Sphingidæ*, so common about flowers in the tropics; but a careful approach revealed a humming-bird with a rufous rump. Suddenly it vanished, and upon examining the web I found that many of the silken filaments had been torn apart and carried away, presumably for nest material. Again I heard the humming, and saw the little wood's-sprite in the air a few feet from my head, the wings moving so rapidly as to present only an indistinct blur in the gloom. I 'froze' (apologies to Thompson-Seton), and thus bird and man regarded each other for some minutes, until a loud "hallo-o" from my companion broke the spell, and caused me to join him farther up the now ascending trail.

Meanwhile several birds had fallen to Underwood's gun, including two woodpeckers, *Melanerpes hoffmani* and *Chloronerpes yucatanensis*, a peculiar cuckoo-like bird, *Piaya cayana thermophila*, having a long graduated tail, and a large Costa Rica woodhewer (*Xiphocolaptes emigrans costaricensis*). We had now emerged from the jungle into an open, park-like *portrero*, or pasture, where the trees were much larger, and grew in scattered clumps. Roots grew out from the trunks at a good height and hung to the ground like immense cables, while the upper branches supported an endless variety of orchids, bromelias, air plants, mosses and lichens.

A small tree having sweet-scented, white flowers was resorted to by humming birds in large numbers, Reiffer hummingbirds being the most abundant. A large species with a white rump was not secured. One male specimen of the Helana coquette (*Lophornis helenæ*), an exquisite little gem, was taken high up in a tree at the long, tubular, pink flowers of a climbing vine. The coquette is a very small object when feeding in this manner, and as it does not hum loudly in comparison with other species often escapes detection.

Some guava trees next investigated yielded specimens of Wilson black-cap and chestnut-sided warblers, and summer tanagers, all in poor plumage. A squirrel (*Sciurus aestuans hoffmani*), busily breakfasting on the guava fruit, was also taken, and a handsome fellow he was, with his long, silvery tail and fiery underparts. By this time our presence had been noted by a troop of white-tailed brown jays (*Psilorhinus mexicanus*), in some trees on the farther edge of the *portrero*, and they flew away with a great clatter. Many of the small birds appear to rely upon *Psilorhinus* as a sentinel, for we immediately noticed a great depletion in their numbers. A peculiar croaking or rasping note drew our attention to a pair of cotingas (*Tityra semifasciata personata*), moving about among the dead limbs of a tall tree, and both birds were secured by a lucky shot. The male was a delicate shade of plumbeous white, with darker wings, and we found great difficulty in keeping the fine plumage of both birds clean on account of the flow of blood from the wounds.

A larger tree in the center of the *portrero* was occupied by a colony of Wagler oropendolas (*Zarhynchus wagleri*)—commonly called weaver birds in Costa Rica. As many as fifty of their beautiful, pendant nests, each one three or four feet in length, hung from the terminal foliage of the upper branches; the various tree mosses of which they were constructed giving to them a greenish gray color. As we approached, twenty or thirty of the birds flew swiftly away with rapid wing-strokes, but a number remained and peered down at us through the foliage, chattering noisily all the while. A few went into the nests through the entrance hole near the top of the structure, while still others merely poked their heads out.

Very young birds were found a few days later in the four nests hanging from the first branch, and seen near the main trunk in the lower portion of the plate.<sup>a</sup>

Great difficulty was experienced in securing these nests for examination, Mr. Carriker being obliged to climb the smooth, slender tree to a height of some forty feet before reaching the first branch. He then cut off at the base the slender limb bearing the nests, and carefully lowered them to the ground. After examining the young birds the nests were fastened to the lowest branch of the tree in the hope that the parent birds might find and care for the young ones. While in the tree Mr. Carriker also secured several empty nests which were preserved as specimens.

Among others the following North American birds were noted by Mr. Underwood and myself in the *portrero*: swallow-tailed kite, sparrow hawk, black vulture, mourning dove and scissor-tailed flycatcher.

a. Taken near La Gloria, five miles east of Juan Vinas. There are over thirty nests in the colony.

The bright tropical sun was now high in the heavens, and most of the birds had sought shady retreats to pass the stifling heat of midday in silence. We heard only the harsh notes of chachalacas, and the soft cooing of wood pigeons on the hillside, as we started on our return. Space is lacking to mention in detail the many incidents of our walk back to Juan Vinas, or the wealth of tropical verdure and insect life on which our eyes feasted.

Great, superb *Morpho* butterflies, with wings of iridescent blue, often came flapping by in the narrow trail, only to immediately disappear in the jungle. When followed, tantalizing flashes of blue would lead me far back into densest thickets, where my phantom would disappear completely, and unless I chanced to see the dark outline, and large owl-like eye spots of the under wings against the lichen-covered tree trunk to which the insect clung, it was rare indeed that I gathered one into the folds of my net.

In the darkest shades, where the rays of sunlight seldom penetrated the leafy mantle overhead, hundreds of *Heliconians*—butterflies with transparent wings, varied with shades of brown, red, black, white and blue—danced about in the soft light presenting a most mystifying appearance when seen for the first time. Here, also, two large *Caligo* butterflies were met with, even larger than the *Morpho*; the upper wings, instead of bright blue, a dark brown or plumbeous color—modified to harmonize with the perpetual shades of their environment.

But I have wandered far from my subject and taken up too much valuable space. Suffice it to say that for two weeks each day was a repetition of the first days of unalloyed pleasure.

Among our pleasant memories of Juan Vinas, and the one which will without doubt be the most lasting, was a midnight serenade accorded us by the two *Gatos* (cats), wandering Indian musicians of the Tuecirici tribe. Neither of the Indians had ever seen a musical note, yet they played the guitar with a remarkable depth of tone, and produced the most ravishing strains of music—strains which could have their origin only in the soul of one in complete harmony with Nature's music.

### Nesting Habits of the Shufeldt Junco

BY HERMAN T. BOHLMAN

A SHORT description of the nesting habits of two Shufeldt juncos (*Junco oreganus shufeldti*) which came under my observation in the spring of 1901, may be of interest to fellow students of bird-lore.

I have found the junco in the vicinity of Portland to be very partial in the selection of a nesting site, to the cuts or embankments which exist along the railroad, electric lines and country roads which wind through the hills south of town. It has been my habit, when the first of May comes around each year, and later as well, to make short expeditions along these lines, and 'switch the cuts' as we termed it. On arriving at the field of operation a light, green sapling, twelve to fifteen feet long was cut, and as I nearly always have a companion in the field, we would walk up the track, diligently applying our switches to the embankments, until we were rewarded by the flushing of a junco from its nest, while the rush and roar of the passing train never disturbed the occupant.

On May 14, 1901, two nests were discovered in this way not 200 yards apart, that were peculiar in the marked difference of their lining. In other respects the